



National Institute of  
BUILDING SCIENCES

# Anniversary Report Celebrating 35 Years 1974 - 2009





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**I**n December 1968, the United States Federal Government’s National Commission on Urban Problems sounded an alarm. The Commission had been formed in January, 1967, as part of President Lyndon Johnson’s War on Poverty. It was headed by Illinois Senator Paul Douglas, and soon came to be known as “The Douglas Commission.” Over the course of two years leading up to that date, the Commission had penetrated the labyrinth of zoning, housing and building codes, as well as taxation and development standards. It also documented the need to increase the supply of low-cost, decent housing. The Commission reported, “...alarms sounded over the past years about the building code situation have been justified. They showed that, while the national model codes were reasonably up to date, the lack of uniformity and modernization at the local level was serious. This situation calls for a drastic overhaul, both technically and among various levels of government.”

The Commission’s warning trumpeted fears and concerns not only about the existing crisis in the absence of national building code standards, but also in the possible framework for solutions. In the energized atmosphere of the mid-1960’s and the “Great Society,” one might reasonably expect a new federal agency to continue the work of the Douglas Commission – identifying problems and offering solutions.

Solutions and recommendations followed under the newly minted National Institute of Building Sciences, “a constituent body in the National Academy of Sciences – National Academy of Engineering.” There was a growing understanding that the skills and provenance of existing public and private technical groups offered resources that could be brought together under the framework of the Institute.

The official authorization of the Institute occurred on August 22, 1974, when The Housing and Community Development Act was signed into law. The mandate stated:

“The Congress finds that the lack of an authoritative national source to make findings and to advise both the public and private sectors of the economy with respect to the use of building science and technology in achieving nationally acceptable standards and other technical provisions for use in Federal, State and local housing and building regulations is an obstacle to its efforts by and imposes severe burdens upon all those who procure, design, construct, use, operate, maintain, and retire physical facilities, and frequently results in the failure to take full advantage of new and useful developments in technology which could improve our living environment.

“The Congress declares that an authoritative nongovernmental instrument needs to be created to address these problems and issues.

“There is authorized to be established an appropriate nonprofit, nongovernmental instrument to be known as the National Institute of Building Sciences which shall not be an agency or establishment of the United States Government.”

The National Institute of Building Sciences immediately set to work addressing the issues specified by Congress, although implementing its deliberative framework was a three-year process. President Gerald Ford appointed the first 18-member board of directors, sworn in on July 9, 1976. The directors elected Gene C. Brewer to be the Institute’s first president in November 1977, at which time the organization opened its headquarters on Pennsylvania Avenue.

The earliest programs addressed:

- rehabilitation guidelines
- residential energy efficiency standards
- building code development and updating
- mobile home construction and safety standards

In the spirit of its founding, the Institute would convene public and private interests to create active councils to address specialty issues associated with the building process. The 1978 formation of the Building Seismic Safety Council (BSSC) created one of the world's most widely recognized authorities on the subject, from which thousands of technical seismic documents are generated each year, developing and promoting building earthquake risk mitigation regulatory provisions for the nation.

Another early program brought together 50 representatives of public and private interests to address insulation materials used in construction. This group was formalized in 1982 and is known today as the Building Enclosure Technology and Environmental Council (BETEC). In 2004, BETEC created the Building Enclosure Council (BEC), a network of affiliated architects, engineers, contractors, manufacturers and others who provide a forum for the construction industry to address building enclosures.

The founding 500 members of the National Institute of Building Sciences recognized the potential enormity of the Institute's mission and the need for a smaller, more responsive deliberative body to review recommendations and potential projects before presenting them to the Board of Directors. They formed the Consultative Council to advise the Institute's Board of Directors and oversee assigned consensus projects.

The National Institute of Building Science's visibility and reputation for excellence continued to grow in the 1980's. After an exhaustive three-stage review and analysis of federal regulations impacting the housing and building industry, the Institute presented 19 recommendations for change to Vice President George H. W. Bush in 1981. The Institute became an important resource for building-related science at Congressional hearings. During this period, the Institute began to lead or participate in workshops, seminars, and forums to draw on and instruct leaders in the housing and building industry.

Because of its breadth and depth of experience from its volunteer participants and other informational resources, the Institute was entrusted with the highly controversial issue of smoke toxicity resulting from building fires. As a result of its 1986-1989 study, an Institute task force produced a new test apparatus and test method to assess the relative toxic potency of a range of building materials and furnishings. During this same period, the Institute's Wood Protection Council produced the widely-used general

guidelines to address the protection of wood building and housing components from decay and insect attack.

In the mid-1980's, a marked downturn in the economy and the 1984 termination of the National Institute of Building Science's annual federal appropriation forced the Institute to reconsider its priorities. The Institute's appropriation was replaced with a matching funds arrangement with the federal government, which contributed a dollar for every dollar that the Institute raised from the private sector. Thus, it became imperative to focus on extraordinary service to public and private members of the building community. At this critical juncture was born the Automated Facilities Engineering Information System (AFEIS) in 1986. Within six months, the Institute developed a full-text search and retrieval of design and construction criteria from the U.S. Army Corps of Engineers, Naval Facilities Engineering Command, and National Aeronautics and Space Administration. Pioneering the use of CD-ROM technology, the Institute's Construction Criteria Base (CCB) contained more than one million searchable pages, available to more than 2,000 public and private subscribers. Keeping pace with technology, CCB evolved into today's web-based Whole Building Design Guide (WBDG), a continuously updated electronic library of construction criteria from those same participating federal agencies that currently has more than 2.4 million unique users who downloaded 22.5 million documents in 2008 alone.

At the end of 1986, the Institute's first president, Gene Brewer, retired. He was succeeded by Rene A. Henry, who served until the appointment of David A. Harris, FAIA, in 1988. Mr. Harris was already a vice-president at the Institute and an Institute employee since 1980.

Rounding out the decade of the 1980's, the National Institute of Building Sciences continued its critically important role as the source of purely scientific, non-partisan data in some of the most highly contentious issues within the building and construction industry. Addressing the highly visible controversy over asbestos and lead-based paint, the Institute convened meetings of the medical community, health and safety organizations, members of the building community, and consumers. The resulting publications, *Guide Specifications for Asbestos Abatement in Buildings* (1986) and the *Lead-Based Paint Testing, Abatement, Cleanup and Disposal Guidelines* (1989), were recognized as complete and authoritative information, and were used as text books in training and certification courses.

In the 1990's, the National Institute of Building Sciences entered a period of expansion of its services. Indeed, the Institute undertook focus groups and confidential interviews, which, based on the information and perceptions it obtained, resulted in recommendations for specific program design and an implementation schedule. The Institute was contracted to study and provide advice and counsel on topics that were groundbreaking at the time and that are now recognized as having been at the vanguard of a safer and more secure quality of life in the built environment. Such projects included informed consideration of:

- international influences on the U.S. building industry
- criteria for the design of U.S. courts
- handicap accessibility
- radon in buildings
- a survey of the model codes
- land use guidelines
- conversion of federal construction to metric measurements
- a flood standards study
- a methodology to estimate earthquake loss
- a life-cycle approach to operations and maintenance of buildings

The Institute formed the Facilities Maintenance and Operations Committee in 1995 to focus on improving performance and longevity of buildings and building systems through more consistent, effective, and proper facility maintenance and operation.

In 1996, the Institute developed the Multihazard Loss Estimation Program Hazards U.S. (known as HAZUS), under a cooperative agreement with the Federal Emergency Management Agency (FEMA). This project grew out of the Earthquake Loss Estimation Study, begun in 1992. Today, the national applicable HAZUS software tool is used by communities across the country to estimate the effects of natural disasters, including earthquakes, riverine and coastal floods, and hurricane winds. In 1997, the Institute formed the Multihazard Mitigation Council (MMC) to reduce the effects of natural disasters and other extreme events.

In 1998, the Institute welcomed the National Clearinghouse for Educational Facilities (NCEF) into its family of projects. Initially won by a competitive bid from the U.S. Department of Education, this project continues to be funded by a grant. With more than 1,000,000 hits per month,

NCEF currently serves a \$43 billion education construction market and a constituency of school administrators, educators, legislators, parents, architects and planners.

In both 1998 and 2000, the National Institute of Building Sciences adopted mission statements and set goals. The 1998 document focuses on the Institute's role as convener of building industry constituencies and facilitator of acquiring and disseminating information. It also emphasized the burgeoning possibilities of information technology. In today's vocabulary, these values and priorities would be called a "branding" effort. A goal was set for a proactive program to promote the Institute's relationship to Congress. It is summarized by the statement, "Our vision is a declaration of our aspirations for the future of the organization." It included a very ambitious goal to triple the organization's annual revenue within eight years.

The 2000 mission statement and goals showed a dramatic return to the work of pure science within the building industry. The National Institute of Building Sciences would maintain its leadership role as, "The authoritative national source of knowledge and advice on matters of building science and technology and as a leadership forum for the purpose of bringing together the building community." Specific goals included:

- promoting a more rational building regulatory environment
- developing and using new technology and processes
- promoting quality in the built environment
- disseminating nationally recognized technical information
- facilitating building science investigations and research
- seeking solutions to building community problems and needs

Responding to the 1998 mission statement and goals, the National Institute of Building Sciences assumed oversight of the International Alliance for Interoperability (IAI) in 2002. IAI was founded to standardize data collection and transmission (Industry Foundation Classes) within the international building industry. The seamless flow of data was, and remains, a critically important service to members of the industry.

The events of September 11, 2001, had a clear impact on the urgency of the Institute's mission and its opportunity for service to virtually every member of America's communities. It could hardly be more visible that we need and are entitled to safe buildings as a simple matter of survival. This



self-examination by every constituency of the built environment confirmed the impact of high standards' effect on health, productivity, efficiency, and everyone's sense of comfort and personal safety. The Institute cooperated with the National Institute of Standards and Technology (NIST) in 2005 to study the collapse of the World Trade Center and to offer provisions to be adopted by local building codes.

Subsequent years found the Institute not only responding to the exigencies highlighted by 9/11, but also reaching to its roots to challenge and provide leadership to the building industry by:

- setting a priority of optimal physical security and disaster preparedness
- making the case for bolstering and securing the economy
- fostering health and productivity, and making wise use of resources

Following the destructive effects of 2004's Hurricane Ivan, the Institute called for attention to the safety of homes, hospitals, firehouses, power and water lines, roads, and other lifelines that might be in a hurricane's path. In 2005, in spite of the tumultuous post-Hurricane Katrina political climate, the Institute remained focused on solutions to the problems laid bare by the natural disaster. In an atmosphere brimming with anecdote, the Institute provided definitive information, particularly in the report, *Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities*. This report showed how, on average, a dollar spent on mitigation saves society four dollars in avoided future losses. The distribution of this information throughout Congress and several federal agencies yielded significant media coverage, from professional journals to consumer media. Four years later, the report continues to be referenced in articles on a regular basis.

One must note that the strategies, plans, and evaluations produced by the various Institute councils show a growing inclusion of "green," or environmental and conservation considerations in their reports. Whether planning a new facility, recycling building materials, or addressing rising energy costs, green issues reflect the Institute's concern for providing direction with scientifically sound guidelines for impact on the environment, as well as impact on the quality of life. To this end, the Institute's High Performance Building Council was formed in 2006 to coordinate an industry-wide assessment of existing standards and to identify performance metrics for high-performance buildings.

The National Mechanical Insulation Committee (NMIC) was formed in 2006 to bring a focus on this important technology that is so often taken for granted. NMIC brought together major governmental agencies, private industry and other organizations concerned with the design, installation and maintenance of mechanical insulation.

In 2007, the National Institute of Building Sciences began administering ProjNet<sup>SM</sup>, an accredited, online business-process service maintained by the U.S. Army Corps of Engineers. ProjNet<sup>SM</sup> helps government agencies, state agencies, commercial firms, and higher education institutions exchange and manage their building design and construction information. Applications within ProjNet<sup>SM</sup> have become the de facto federal standards for a number of owner-related business processes such as design review, bidder inquiry and secure file exchange.

Also in 2007, the Institute formed the buildingSMART alliance<sup>TM</sup> by consolidating the work on the Facilities Information Council and the International Alliance for Interoperability North America chapter. The buildingSMART alliance<sup>TM</sup> develops and coordinates new technologies aimed at streamlining the way buildings are designed, built and operated, as well as making the flow of information more efficient. It oversees the development of the U.S. National CAD Standard<sup>®</sup> and the National Building Information Modeling Standard<sup>TM</sup>.

Today, the National Institute of Building Sciences faithfully maintains its historical connections to FEMA, NIST, the U.S. Department of Education and other Federal agencies. The 2008 arrival of Henry L. Green, Hon. AIA, as president and CEO, succeeding the distinguished tenure of David A. Harris, FAIA, honors the careful attention paid to the documents produced by Institute constituencies. Mr. Green served as the Institute's board chair from November 2001 to January, 2004. Under his new role, councils and programs are taking steps to maximize efficiency and cost-savings.

As the Institute looks back at the 35 years since its founding, it also looks forward to the role it plays in protecting lives and communities. With strong leadership, a hardworking staff, dedicated boards and committees, and passionate members and volunteers, the National Institute of Building Sciences will continue to serve as the authoritative source of innovative solutions for the built environment.



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